

Response to EPA Comments on
Proposed Plan Approval 23-0012C
For Braskem America, Inc.
August 2, 2016

This proposed plan approval is to increase the total polypropylene production rate from plants 1 and 2 at Braskem America, located in Marcus Hook, Pennsylvania, from 455,900 tpy to 595,680 tpy. The facility is a major VOC NNSR source.

Significant comments are highlighted.

1. NNSR Analysis

- a. Step One to the NNSR applicability determination must be delineated. Baseline actual VOC emissions for all affected units must be included and an explanation of the basis for those emissions (CEMs, bases for any emissions factors used, etc.); The Baseline Period must be clear. (January 2014 through December 2015?)

A discussion of each source and the applicable baseline are shown in Attachment C of the plan approval application and the table below. The baseline period is October 2013 through September 2015) as described in Attachment C of the plan approval application (p. 24 of 27).

TVOP Source ID	Project Source	Baseline Discussion
<i>H-5 AREA</i>		
107	RGP Storage Expansion	New source; therefore, no baseline.
	PGP Unloading and Transfer Expansion	New source; therefore, no baseline.
<i>SPLITTER AREA</i>		
106	IRPL Connection	New source; therefore, no baseline.
	Propane Return Line from the Polymers Units	New source; therefore, no baseline.
	P1/P2 PGP Product Transfer Pumps Upgrade ¹	New source; therefore, no baseline.
	Incremental Dryer Regenerations	PAE - BAE analysis shown in Att. C page 15 of 27

C100	SPMT Ethylene Complex Flare	This flare is not modified by this Project. The flare will only experience increased utilization within operating parameters. Establishment of a baseline is not required; however, the estimated emissions increases are included in the 25 Pa. Code 127.203a applicability determination. Analysis for each flow from each source based on the maximum production rate of the facility is provided in other sections of Attachment C.
POLYMERS UNITS		
101A/B	Incremental Storage Silos Purging	PAE - BAE analysis shown in Att. C page 23 of 27
102A/B	Propylene Charge Pumps Modifications ²	New source; therefore, no baseline.
	Plant 1/2 Manufacturing Baghouses	PAE - BAE analysis shown in Att. C page 18 of 27
	Propane Return Line Filter Changing	PAE - BAE analysis shown in Att. C page 19 of 27
	Incremental Propylene Degassing Column	PAE - BAE analysis shown in Att. C page 20 of 27
	Incremental Propylene Dryer Regenerations	PAE - BAE analysis shown in Att. C page 21 of 27
	Incremental Product Purge Bin Purging	PAE - BAE analysis shown in Att. C page 22 of 27
C02	Braskem Flare	This flare is not modified by this Project. The flare will only experience increased utilization within operating parameters. Establishment of a baseline is not required; however, the estimated emissions increases are included in the 25 Pa. Code 127.203a applicability determination. Analysis for each flow from each source based on the maximum production rate of the facility is provided in other sections of Attachment C.

1 - The P1/P2 PGP Transfer Pumps are proposed to have new impellers installed; however, this change will not result in an emissions increase. The emissions increases will occur from new periodic maintenance purges and new fugitive VOC piping components. Therefore, there are no baseline emissions for this change.

2 - The Propylene Charge Pumps are proposed to have new impellers installed; however, this change will not result in an emissions increase. The emissions increases will occur from new periodic maintenance purges and new fugitive VOC piping components. Therefore, there are no baseline emissions for this change.

Braskem has evaluated the emissions increases from existing units following the Applicability determination of 25 Pa Code §127.203a(1)(i)(A) which describes the use of projected actual emissions (PAE). The PAE for this project are based on the maximum polypropylene production rate after the proposed modifications of 595,680,000 pounds per year. This production rate has been included in the Draft 23-0012C Plan Approval as a limit. Based on the nature of operations, this limit is the most practical and enforceable way to limit the facility's potential to emit (PTE). Additionally, new and revised limits associated with this project include:

- Source ID 101A – Plant 1, Three Storage Silos – PM/PM10 emissions limit of 7.10 tons per 12 month rolling sum
 - Source ID 101B – Plant 2, Three Storage Silos – PM/PM10 emissions limit of 7.10 tons per 12 month rolling sum
 - Source ID 102A – Plant 1 Polypropylene MFG Sources – Polypropylene production limit of 595,680,000 pounds per 12-month rolling sum
 - Source ID 102B – Plant 2 Polypropylene MFG Sources – Polypropylene production limit of 595,680,000 pounds per 12-month rolling sum
- b. The proposed throughput limit of 595,680,000 pounds per year for each plant would establish potential to emit (PTE) for VOC emissions. If PTE is used [and not projected actual emissions (PAE)], no emissions may be excluded in the analysis.

The increase of the production rate of the facility may not be directly proportional to VOC emissions increase as certain operating parameters vary. For example,

- The fugitive emissions from the existing piping components will not change under current work practices. The fugitive emission increases are from the new components/piping only. The fugitive emissions from the new components are estimated based on the facility current work practice LDAR results and the percentage of leaking components. DEP believes that the estimation is reasonable and reflects the required implementation of the work practice standards in the plan approval. No fugitive emissions were excluded in the emissions analysis.
- For certain sources [Polymers Units (Source IDs 102A and 102B) and Storage Silos (Source IDs 101A and 101B)], the emissions increases are proportional to the production rate. Further, since production rate limits are being set, the PTE and PAE values are equivalent. For these sources, the production rate “that could have accommodated” was used in calculating BAE.
- For all other emission sources the numbers of maintenance events and equipment purges, etc. will generally increase when production rate increases. However, these numbers do not double when production rate

doubles, because these emissions are from work related activities. These emissions are considered PAE instead of PTE since the emissions are estimated based on historical production records and experience of running the chemical plants.

- c. Please provide the calculations used that show the VOC emissions associated with the new PTE limits.

Braskem did not request any increases to VOC emissions limits in the current Title V Operating Permit 23-00012. The production limit is set for each production line.

- d. Please show how the VOC increase from the project is determined, i.e., PTE minus Baseline Actual Emissions (BAE). Without this information, the NNSR analysis is incomplete and the submission to EPA is incomplete.

See response to Comment 1.a and Section 3 and Attachment C of the Plan Approval application as they are attached to this response.

- Section 3 (Detailed Project Emissions Analysis), and
- Attachment C (Back-up Emissions Calculations).

2. PSD Analysis

- a. Please identify if the source is a major PSD source so that the reader may ascertain whether the modification is a modification to a major source.

The review memo was revised to state:

“The facility is major for VOC emissions only and located in an ozone marginal nonattainment area. Therefore, this facility is **not** a PSD source.”

- b. Assuming the source is a major PSD source, or if not, to ascertain whether the modification itself is a major source, Step One to the NSR applicability determination must be delineated. The Baseline Period must be identified (January 2014 through December 2015?) BAE for all affected units must be included.

The review memo was revised to state that the source is not a PSD source, and the project is not a major project. The details are explained in the review memo.

- c. Please provide the calculations used that show the emissions for all NSR regulated pollutants, including PM_{2.5} and excluding VOCs, associated with the

BAE and the new PTE limits. (See above comment regarding PTE compared to PAE)

The calculation of PM_{2.5} emission increase from the project is included in PM emissions, which is below the significant level of 10 TPY. Therefore, the project is not subject to NNSR for PM_{2.5}.

- d. Please show how the increase from the project is determined, i.e., PTE minus Baseline Actual Emissions (BAE). Without this information, the PSD NSR analysis is incomplete and the submission to EPA is incomplete.

See responses to Comment 1.a and b.

- 3. CAM – The review memo states that CAM does not apply because the emissions controlled by the flares do not have an emissions standard.
 - a. Flare C02 - Condition #001 to Sources 102a and b in the title V permit specify VOC emissions limits, so the above statement is not correct. The flare is a control device as defined in 40 CFR 64.1. This assertion, even if correct, is not one of the exemptions found at 40 CFR 64.2(b).

Flare C02 is subject to CAM. The review memo was revised to address the requirements to comply with CAM.

- b. Flare C100 – The review memo should state, in the CAM discussion, that the applicability of CAM to the Sunoco flare should be addressed in the DNREC permit. From looking at the DNREC permit, one might conclude that the flare is exempt from CAM because the flare is subject to MACT and NSPS requirements.

This flare complies with MACT, and is exempt from CAM requirements.

- 4. The project –
 - a. The permit map is not included in the draft permit and should be, as the map would show which units have controls and how emissions are directed via stacks.

The maps were added.

- b. Because downstream (flares) and upstream (boilers) are affected by the project, we expect that the permits for SPMT in Delaware as well as FPL would be modified. We previously advised that the steam demand is not part of the project because the Braskem facility is not aggregated with FPL. Please note this in the review memo. Also please note, in the review memo, whether DNREC has been informed about this project and whether the FPL permit is being modified accordingly.

As noted in Sections 3.5 and 3.6 of the January 2016 Plan Approval application, the Ethylene Complex Flare (Source ID C100) and Auxiliary Boilers will not be modified, since the increased utilizations are within the existing capacities as part of the project. Both SPMT and FPL are aware of the respective impacts as a result of this project. There are no changes required to the existing operating permits for the boiler. The SPMT flare permit is under current discussion with DNREC.

5. PM₁₀ and PM_{2.5} emissions - Please explain the purpose of and basis for the proposed PM₁₀ emissions limits. Why are PM₁₀ Limits proposed but not PM_{2.5} limits? Depending on the purpose of these limits, a means of assuring compliance with the limits may need to be specified in the plan approval.

The PM₁₀/PM_{2.5} limits are based on best available technology (BAT) of 25 Pa. Code §127.12(a)(5). It is assumed that PM_{2.5} emissions are the same as PM₁₀ emissions for this project.

6. VOC emissions - We note that the current VOC caps on the production lines in Plants 1 and 2 are not changed. We also note that the current permit allows *The permittee shall calculate the VOC emissions on a monthly basis and 12 month rolling sum, using DEP approved methods*. The methods to assure compliance with the various VOC caps for this facility must be specified in order to make this permit enforceable as a practical matter, i.e., to confirm that the source remains in compliance with the VOC caps.
 - a. For the Source ID 101A/B Plant 1/Plant 2 Storage Silos – Braskem monitors loading and hours of operation of Plant 1 or Plant 2 and applies a stack test emission factor to calculate VOC emissions.
 - b. For the Source ID 102A/B Plant 1/Plant 2 Polypropylene Manufacturing Sources and Source ID 106 Propylene Splitter Process – Braskem monitors mass flow meter data and material balances to calculate VOC emissions from point sources. For VOC emissions from fugitive sources, Braskem monitors emissions through application of a work practice standard (LDAR program) which is the only practically enforceable approach for fugitive emissions.
 - c. For the Source ID 107 H-5 Propylene Unloading Rack – Braskem monitors the number of railcars unloaded per day and applies mass balance calculations and engineering estimates to calculate VOC emissions from point sources. For VOC emissions from fugitive sources, Braskem monitors emissions through application of a work practice standard (LDAR program) which is the only practically enforceable approach for fugitive emissions.

- d. For the Source ID 103A/B Plant 1/Plant 2 Fugitive sources – Braskem monitors emissions through application of a work practice standard (LDAR program) which is the only practically enforceable approach for fugitive emissions.

To assure compliance with the VOC caps, the following condition was added in Section C of the Plan Approval to assure that the above methods are enforceable:

Before obtaining an Operating Permit for this project, the permittee shall submit to the Department for approval the methods of emission calculations, the emission factors and the operating parameters used in the calculations, and the methods of monitoring and recording the operating parameters. Once approved, the methods of emission calculations, the parameters monitored and recorded will be specified in the Operating Permit when an amendment to incorporate this Plan Approval is issued.

7. HAP emissions – Please identify the HAP PTE, after the proposed change, in the review memo. If this change affects its current minor HAP status, affected applicable MACT requirements should be fully addressed.

The Braskem Marcus Hook Polymers facility is an area source of HAP emissions. The HAP emissions are from combustion sources only, boilers, flares, and pump engines. The production rate increase will not change the HAP status as an area source.

8. The same production limits on plants 1 and 2 are stated in various conditions, including Condition #2 on pages 11, 14 and 18 and Condition #3 on pages 12, 16 and 20. We recommend that the throughput limit should be set forth once, perhaps in Section C, for brevity/clarity.

These emission limits are source specific, and not a facility wide emission limit. Therefore, it is better to specify them under each source ID.